

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Appln. No: To Be Assigned  
Applicant: T. Kishigami et al.  
Filed: August 6, 2003  
Title: RADIO-WAVE ARRIVAL-DIRECTION ESTIMATING APPARATUS AND  
DIRECTIONAL VARIABLE TRANSCEIVER  
TC/A.U.:  
Examiner:  
Docket No.: MAT-8207US1

**INFORMATION DISCLOSURE STATEMENT**

Mail Stop Patent Application  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 C.F.R. §§ 1.97 and 1.98 and to the duty of disclosure set forth in 37 C.F.R. § 1.56, the Examiner in charge of the above-identified application is requested to consider and make of record the references listed on the PTO 1449 (R&P) submitted herewith.

Although the information submitted herewith may be "material" to the Examiner's consideration of the subject application, this submission is not intended to constitute an admission that such information is "prior art" as to the claimed invention.

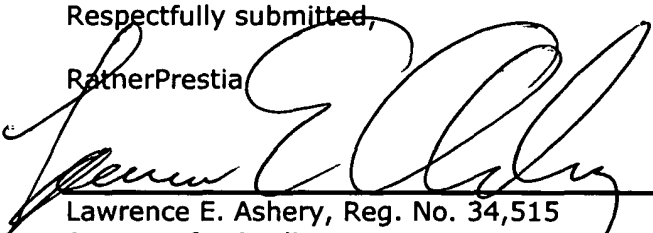
In accordance with 37 C.F.R. § 1.97(g), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made.

Under 37 C.F.R. § 1.98(d), copies of the patents and publications listed on the enclosed PTO Form 1449 are not required to be provided, because they were cited by or submitted to the Patent and Trademark Office in prior application Serial No. 10/020,477, filed December 12, 2001, which is relied upon for an earlier filing date under 35 U.S.C. § 120.

This Information Disclosure Statement is being filed concurrently with the above-referenced application.

Respectfully submitted,

Ratner Prestia

  
Lawrence E. Ashery, Reg. No. 34,515  
Attorney for Applicants

LEA/kc

Enclosures: PTO Form 1449 (2)

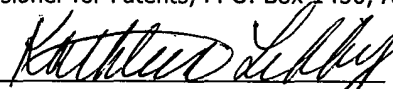
Dated: August 6, 2003

P.O. Box 980  
Valley Forge, PA 19482-0980  
(610) 407-0700

The Commissioner for Patents is hereby authorized to charge any additional fees/credit any overpayment of fees associated with this communication to Deposit Account No. **18-0350**.

**EXPRESS MAIL** Mailing Label Number: EV 351886018 US  
Date of Deposit: August 6, 2003

I hereby certify that this paper and fee are being deposited, under 37 C.F.R. § 1.10 and with sufficient postage, using the "Express Mail Post Office to Addressee" service of the United States Postal Service on the date indicated above and that the deposit is addressed to the Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450.

  
Kathleen Libby

Substitute for Form 1449A/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

**C mplete if Known**

Application Number To Be Assigned

Filing Date August 6, 2003

First Named Inventor T. Kishigami

Art Unit

Examiner Name

Attorney Docket No. MAT-8207US1

SHEET 1 of 2

**U.S. PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Issue Date/ Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number - Kind Code <sup>2</sup> (If known)			
		US-5,262,789	11/16/1993	Silverstein	
		US-6,091,361	07/18/2000	Davis et al.	
		US-5,943,013	08/24/1999	Ohashi	
		US-5,299,148	03/24/1994	Gardner et al.	
		US-6,084,928	07/04/2000	Kuwahara	
		US-6,351,238	02/26/2002	Kishigami et al.	
		US-6,529,745	03/04/2003	Fukagawa et al.	
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			

**FOREIGN PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup> - Number <sup>4</sup> - Kind Code <sup>5</sup> (If known)				
		EP 1 031 846 A2	08/30/2000	Matsushita Electrical Industrial Co., Ltd.	Page 1, Figs 15, 16	<input type="checkbox"/>
		EP 0 632 286 A2	01/04/1995	Hughes Aircraft Co.	Abstract	<input type="checkbox"/>
		EP 0 971 485 A1	01/12/2000	Siemens AG	Abstract	<input type="checkbox"/>
		WO 99 65160 A1	12/16/1999	Picciriello; Fanfoni; Spagnollini	Page 31-37	<input type="checkbox"/>
						<input type="checkbox"/>
						<input type="checkbox"/>

Examiner  
SignatureDate  
Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

<sup>1</sup>Applicant's unique citation designation number (optional).

<sup>2</sup>See Kind Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04.

<sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard St.3).

<sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.

<sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible.

<sup>6</sup>Applicant is to place a check mark here if English language translation is attached.

The collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO : Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Substitute for Form 1449B/PTO  <h2 style="text-align: center; margin: 0;">INFORMATION DISCLOSURE STATEMENT BY APPLICANT</h2> <p style="text-align: center; margin: 0;"><i>(Use as many sheets as necessary)</i></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center; padding: 5px;"><i>C mplete if Kn wn</i></th> </tr> <tr> <td style="width: 50%; padding: 5px;">Application Number</td> <td style="width: 50%; padding: 5px;">To Be Assigned</td> </tr> <tr> <td style="padding: 5px;">Filing Date</td> <td style="padding: 5px;">August 6, 2003</td> </tr> <tr> <td style="padding: 5px;">First Named Inventor</td> <td style="padding: 5px;">T. Kishigami</td> </tr> <tr> <td style="padding: 5px;">Art Unit</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Examiner Name</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Attorney Docket No.</td> <td style="padding: 5px;">MAT-8207US1</td> </tr> </table>	<i>C mplete if Kn wn</i>		Application Number	To Be Assigned	Filing Date	August 6, 2003	First Named Inventor	T. Kishigami	Art Unit		Examiner Name		Attorney Docket No.	MAT-8207US1
<i>C mplete if Kn wn</i>															
Application Number	To Be Assigned														
Filing Date	August 6, 2003														
First Named Inventor	T. Kishigami														
Art Unit															
Examiner Name															
Attorney Docket No.	MAT-8207US1														
<b>SHEET 2 of 2</b>															

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T <sup>2</sup>
		Schmidt, Ralph O., "Multiple Emitter Location and Signal Parameter Estimation," IEEE Trans., Vol. AP-34, No. 3, pp. 276-280 (March 1986)	<input type="checkbox"/>
		Wax et al., "Detection of Signals by Information Theoretic Criteria," IEEE Trans., Vol. ASSP-33, No. 2, pp. 387-392 (April 1985)	<input type="checkbox"/>
		Pillai et al., "Forward/Backward Spatial Smoothing Techniques For Coherent Signal Identification," IEEE Trans., Vol. 37, No. 1, pp. 8-15 (January 1989)	<input type="checkbox"/>
		Haardt et al., "Unitary ESPRIT: How To Obtain Increased Estimation Accuracy with a Reduced Computational Burden," IEEE Trans., Vol. 43, No. 5, pp. 1232-1242 (May 1995)	<input type="checkbox"/>
		Capon, J., "High-Resolution Frequency-Wavenumber Spectrum Analysis," PROCEEDINGS OF THE IEEE, Vol. 57, No. 8, pp. 1408-1418 (August 1969)	<input type="checkbox"/>
		Kendall, David G., "Smoothing Periodograms from Time-Series with Continuous Spectra," Nature, Vol. 161, No. 4096, pp. 686-687 (May 1948)	<input type="checkbox"/>
		Karimi et al., "A Novel and Efficient Solution to Block-Based Joint-Detection Using Approximate Cholesky Factorization," IEEE Trans., Vol. 3, pp. 1340-1345, 1998	<input type="checkbox"/>
		European Search Report for Application No. EP 01 12 9227.3, dated July 16, 2002.	<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>

Examiner Signature	Date Considered
-----------------------	--------------------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

<sup>1</sup>Applicant's unique citation designation number (optional).

<sup>2</sup>Applicant is to place a check mark here if English language translation is attached.

The collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 120 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.  
**SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

*If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.*